

WHAT IS CLAIMED IS:

1. A multi-element polycrystal, which is a mixed crystal essentially formed of elements A and B having different absorption wavelength ranges and having  
5 an average composition represented by  $A_{1-x}B_x$ , wherein the element B absorbs light over a longer range of wavelength from a shorter to longer wavelength range than the element A;

each of the crystal grains of the mixed crystal  
10 has a crystallographic texture composed of a plurality of discrete regions dispersed in a matrix thereof; and the average composition of the matrix is represented by  $A_{1-x_1}B_{x_1}$  and the average composition of the discrete regions is represented by  $A_{1-x_2}B_{x_2}$  where  
15  $x_1 < x < x_2$ .

2. The multi-element polycrystal according to claim 1, wherein said  $A_{1-x}B_x$  is  $Si_{1-x}Ge_x$ .

3. The multi-element polycrystal according to claim 2, wherein said X satisfies the relationship:  
20  $x \leq 0.1$ .

4. The multi-element polycrystal according to claim 2, wherein the crystal grains each have a columnar shape, and the discrete regions are three-dimensionally dispersed in the matrix having strain.

25 5. The multi-element polycrystal according to claim 1, which is used in a solar cell.

6. A multi-element polycrystal, which is a mixed

crystal essentially formed of elements C, D, and E having different absorption wavelength ranges and having an average composition represented by  $C_{1-x}D_xE$ , wherein

5           each of the crystal grains of the mixed crystal has a crystallographic texture having a plurality of discrete regions dispersed in a matrix thereof; and  
the average composition of the matrix is represented by  $C_{1-x_1}D_{x_1}E$  and the average composition of  
10           the discrete regions is represented by  $C_{1-x_2}D_{x_2}E$ , where  $x_1 < x < x_2$ .

7. The multi-element polycrystal according to claim 6, wherein said  $C_{1-x}D_xE$  is  $Ga_{1-x}In_xAs$ .

8. The multi-element polycrystal according to  
15           claim 6, which is used in a solar cell.

9. A method of manufacturing a multi-element polycrystal having polycrystalline grains each being formed of a crystallographic texture having discrete regions dispersed in a matrix, comprising the steps of:  
20           preparing a melt containing multi elements; and  
cooling the melt while controlling a cooling rate and/or a composition of the melt to obtain a multi-element polycrystal.

10. The method according to claim 9, wherein the  
25           melt has a composition for a mixed crystal represented by  $A_{1-x}B_x$ ; the element B absorbs light over a longer range of wavelength from a shorter to longer wavelength

range than the element A; each of the polycrystal grains manufactured has a crystallographic texture in which a plurality of discrete regions having an average composition represented by  $A_{1-x_2}B_{x_2}$  are dispersed in  
5 a matrix thereof having an average composition represented by  $A_{1-x}B_x$  where  $X_1 < X < X_2$ .

11. The method according to claim 10, wherein the element A is Si and the element B is Ge.

12. The method according to claim 9, wherein said  
10 X satisfies the relationship:  $X \leq 0.1$ .

13. The method according to claim 9, wherein the melt has components of a mixed crystal represented by  $C_{1-x}D_xE$ ,

each of the polycrystal grains manufactured has  
15 a plurality of discrete regions dispersed in a matrix thereof; and

the average composition of the matrix is represented by  $C_{1-x_1}D_{x_1}E$  and the average composition of the discrete regions is represented by  $C_{1-x_2}D_{x_2}E$ , where  
20  $X_1 < X < X_2$ .

14. The method according to claim 9, wherein the elements C, D and E are respectively Ga, In and As.

15. A method of manufacturing a solar cell by using a multi-element polycrystal manufactured by the  
25 method according to claim 9.